

WHAT IS CLAIMED IS:

1. A method of servo writing using an incorporated servo writer in a disk drive which includes a disk medium, a head corresponding to a disk surface of the disk medium, and an actuator mechanism
5 mounted with the head, the method comprising:

controlling the actuator mechanism on the basis of a basic servo pattern recorded on one disk surface of the disk medium, and performing a positioning
10 control to position the head at a target position on the corresponding disk surface;

calculating a shape distortion of the basic servo patterns with reference to an ideal shape;

correcting a position of the head in accordance with a calculated shape distortion amount of the basic
15 servo patterns; and

writing a new servo pattern in the vicinity of the basic servo pattern on the disk surface of the disk medium with the head whose position is corrected.

20 2. A method according to claim 1, further comprising:

observing a positional error value (e) between the target position and a current position of the head during the positioning control; and

25 calculating a shape of the basic servo patterns by use of the positional error value (e);
wherein

the shape distortion of the basic servo patterns with reference to the ideal shape is calculated in accordance with the calculated shape of the basic servo patterns.

5 3. A method according to claim 1, further comprising:

overwriting user data with the head whose positioning is controlled on the basis of the new servo pattern to delete the basic servo pattern.

10 4. A method according to claim 1, further comprising:

deleting the basic servo pattern after the new servo pattern is written.

15 5. A method according to claim 1, wherein:
the disk medium has a first data surface in which the basic servo pattern is recorded and a second data surface in which the basic servo pattern is not recorded,

20 the actuator mechanism is equipped with a first head corresponding to the first data surface and a second head corresponding to the second data surface, and simultaneously positions the first and second heads,

25 the actuator mechanism is controlled on the basis of the basic servo patterns read by the first head corresponding to the first data surface, and

the new servo patterns are simultaneously written

into the first data surface and the second data surface.

6. A method according to claim 1, further comprising:

5 measuring writing accuracy of the basic servo pattern; and

 writing the new servo pattern on the basis of the measurement when the writing accuracy is out of an allowable range.

10 7. A disk drive comprising:

 a disk medium having a data surface in which a servo pattern is recorded;

 a head for writing and reading data including the servo pattern in and from the data surface;

15 an actuator mechanism mounted with the head which moves the head in a radial direction of the disk surface; and

 a servo writer for writing the servo pattern into the disk medium,

20 wherein the servo writer includes:

 means for controlling the actuator mechanism on the basis of a basic servo pattern recorded on one disk surface of the disk medium, and performing a positioning control to position the head at a target position on the corresponding disk surface;

25 means for calculating a shape distortion of the basic servo patterns with reference to an ideal shape

in accordance with a shape of the basic servo patterns;

means for correcting a position of the head in accordance with a shape distortion amount of the basic servo patterns; and

means for writing a new servo pattern in the vicinity of the basic servo pattern on the disk surface with the head whose position is corrected.

8. The disk drive according to claim 7, wherein:
the servo writer includes:

a unit for positioning the head at the target position on the disk medium on the basis of the basic servo pattern read by the head;

a unit for deciding timing in a rotation direction of the disk surface; and

a unit for writing the new servo pattern.

9. The disk drive according to claim 7, wherein:
the servo writer has a microprocessor and a memory storing a program, and is configured to enable servo writing by causing the microprocessor to execute the program.

10. The disk drive according to claim 7, wherein:
the servo writer includes:

means for observing a positional error value between the target position and a current position of the head during the positioning control; and

means for calculating the shape of the basic

servo patterns by use of the positional error value.

11. The disk drive according to claim 7, wherein:
in the disk medium,

5 the basic servo pattern and the new servo pattern
coexist on the data surface in which the basic servo
pattern has been recorded, after the new servo pattern
is recorded by the servo writer.

12. The disk drive according to claim 7, wherein:
in the disk medium,

10 the basic servo pattern is deleted after the new
servo pattern is recorded by the servo writer.

13. The disk drive according to claim 7, wherein:
in the disk medium,

15 user data is overwritten by the head to delete
the basic servo pattern totally or in part, after the
new servo pattern is recorded by the servo writer.

14. The disk drive according to claim 7, wherein:

20 the disk medium has a first data surface in which
the basic servo pattern is recorded and a second data
surface in which the basic servo pattern is not
recorded,

the actuator mechanism is equipped with a first
head corresponding to the first data surface and a
second head corresponding to the second data surface,
25 and simultaneously moves the first and second heads,
and

the servo writer

controls the actuator mechanism on the basis of
the basic servo patterns read by the first head
corresponding to the first data surface, and

5 simultaneously writes the new servo patterns into
the first data surface and the second data surface.